

SCHERMERHORN'S MONTHLY:

FOR

PARENTS AND TEACHERS.

JUNE, 1876.

WONDERFUL TREES.

IF a citizen of the Old World or of North America were suddenly transported into the midst of a virgin tropical forest, he would be lost in admiration at the gigantic specimens of vegetation, each belonging to different, sometimes remote, families, but mingling their branches and blending their foliage. Nothing there reminds us of the fatiguing monotony of our oak and pine forests; each tree has a bearing peculiar to itself. Excited by the ceaseless action of the two agents, humidity and heat, the vegetation of these forests remains in a state of continual activity. The winter is only distinguished from the summer by a shade of color in the verdure of the foliage; and if some of the trees lose their leaves, it is to assume immediately a new appearance. Certain vegetable forms, which have at home very humble proportions, there present themselves with a floral pomp unknown in temperate climates. There are trees standing side by side, some of them with perfectly smooth bark, others defended by prickly spines. Trees whose obscure flowers in our own land only attract the attention of naturalists, here often display the most brilliant colors in their corollas. There is a radiant and munificent prodigality of beauty in flower and leaf and limb, that bewilders the imagination. Vines and climbing parasites wave in ribbons,

or twist in spiral curves, or hang in festoons, spreading between the trees, and darting from one to another, twining around them, and forming masses of stems, leaves and flowers, where the observer finds it difficult to assign to each species what belongs to it. Flowers of strange and whimsical shape are often seen. Arborescent ferns and thousands of shrubs spring up round the roots of large trees and fill up the intervals left between them. Numerous brooks generally run through these forests, communicating their own freshness to the forest vegetation, presenting to the chance traveler a delicious and limpid water, while the banks of the stream are carpeted with mosses, lycopodiums, and ferns, from the midst of which spring begonias, with delicate and succulent stems, unequal leaves, and flesh-colored flowers. Birds of gorgeous plumage flit silently from bough to bough, or with loud cries and warning notes announce an intrusion upon their retreats. Monkeys gather in groups and chatter. Enormous serpents depend like vines from the gnarled branches of trees, motionless, or glide hissing through the tangled grasses. Beautiful and terrible beasts lurk under the matted shrubs or look down from their perch above through the dense foliage.

But lavish as nature has been in adorning tropical lands with these treasures of vegetation, she has been profuse in bounty toward certain of her children in other parts of the world. We are used to measure her productions by some standard which we have set up in our minds, and which is based on ordinary experience and observation. Any thing that goes far beyond this standard excites our wonder and commands our interest. There are giants among trees as among men; and, as among men there are those whose span of life reaches far beyond the allotted three-score-and-ten years, so there are trees still living which flourished hundreds, perhaps thousands, of years before their contemporaries held up their first budding leaves to the light.

On the west coast of Africa, between two rivers, Gambia and Senegal, there is a district called Senegal, including many African states. It abounds in cultivated spots and far-rolling savannahs of grass, and contains many gigantic plants, and dense, almost impenetrable forests. This region was once explored by Michael Adanson, a French naturalist, who spent

some years in collecting information with regard to the geography of the country and the plants and animals found there.

One day Adanson induced a party of natives, in the village where he was staying, to open a road for him through brushwood and jungle to a part of the forest, where game was said to be abundant. The path was cut through the tangled undergrowth, until at length it led to a break in the forest, which presented a park-like scene, where on the greensward a herd of antelopes, with sleek skins and branching horns, were quietly feeding. Enchanting as this sight might be supposed to be to a sportsman, the traveler seemed to heed it not. His eyes were fixed upon another object, so new and striking that it was worth the journey hither only to behold it. The mythical tales he had heard were then true. Here was a tree of unusual appearance, and of fabulous proportions. In an ecstasy of delight he ran to the colossal trunk and tried to span it with his arms. It was as if the pygmy were striving to embrace the giant. Thirteen times had his outstretched arms to go around the tree ere it was measured.

At a distance, the monster tree looked like a vast green dome or a grove in itself. The singular effect was produced by the manner in which the branches divided from the trunk. The trunk was short in proportion to its bulk; but, at the top, the huge branches separated and bent downward. They were of wonderful thickness, and did not taper off at the point like the branches of other trees, but were as thick at the end as at the base. The branch when it had attained its full perfection sent out smaller ones, with tufts of immense light-green leaves, that formed a mass of verdure scarcely to be surpassed. The spreading boughs made a deep, cool shadow, most grateful in that burning clime. Even a deluge of tropical rain could not reach the traveler, if he had taken refuge under this canopy of nature. The blossoms were also gigantic. The calyx consisted of a single piece, that spread out into the shape of a saucer. There were five petals of purplish-white and crumpled at the edges; and the stamens were united into a cone, each stamen ending in a kidney-shaped anther, which in time shed the pollen.

The baobab is called by botanists *Adansonia digitata*. It is covered with flowers in July, and by October the seed ripens

into fruit. Numbers of the fruits, about the size of cucumbers, hang then from the tree by long twisted stalks. They contain a white substance of an agreeable acid taste, and in which seeds of a dark-brown color are imbedded. The fruit is called the "monkey's bread," and is eagerly sought after and fed upon by the monkeys and baboons. But the negro also puts



A TROPICAL FOREST.

in his claim to a share of the banquet. The pleasant pulp and agreeable juice contained in the fruit must needs be welcome in a thirsty land such as Africa.

The juice is extracted, and forms, with the addition of sugar, a pleasant beverage. It is wholesome, and a preventive against the fevers common in the country, and the fruit itself is sent to other parts of Africa, sometimes finding its way to Egypt. The refuse which has been damaged and can not be

used as food is employed for another purpose in the domestic economy of the negro. He burns it with some of the bark of the tree, and collects the ashes. From these, mixed with palm-oil, he contrives to manufacture soap. He also dries and pounds the enormous leaves of the tree, and puts a portion of the powder-like substance into his daily food. He calls it *lalo*, and considers it a remedy for excessive perspiration.

From the fibers of the bark he can make a strong, tough cord, which is useful to him in many ways. He comes again and again to the trunk for a supply of material for the cord, and it is no uncommon thing to see the baobab stripped of its bark as high as a man can reach. This process would cost the life of any other tree, but not so the baobab. It merely throws out a new bark to replace the old one. In fact, so great is the vitality of the tree, that nothing either from within or without seems able to destroy it. It is often quite hollow, so that twenty or thirty men can lie down within it; yet it goes on growing all the same. Nor does it cease to live even when cut down or blown over by the wind. It contrives to form its layers of wood, as it lies prostrate on the ground, and the roots, which extend some fifty yards under the soil, retain all their vitality.

There is one very peculiar use made of the baobab: the hollow trunk is sometimes converted into a mausoleum for the reception of the dead. The court of the African king, though it may be accounted barbaric, is not wanting in native poets and musicians. When one of these dies the utmost honor that can be paid to him is to inter his body in the hollow trunk of the baobab. When a suitable tree has been selected the cavity is made into a chamber, or, more properly speaking, a tomb, and into it the remains of the deceased *guerrot*, as the poet or musician is called, are placed. The aperture at the top is closed with a plank, and in that climate the body soon becomes dry and like a mummy, without the trouble of embalming it. The natives fancy that, were they to bury the *guerrot* in his mother-earth, some great misfortune would be the result.

But another and a more agreeable use is made of the hollow trunk of the baobab. It is converted into a cistern for supplying water to the neighborhood. This is easily done, because the wood is very spongy and soft, so much so, that an ax can

be struck in such a long way by a good blow, that there is some difficulty in drawing it out again. The wood is, besides, much eaten away by numbers of insects, and can be scooped out without any trouble into the size required. The hollow space thus enlarged fills with water during the rainy season. The heat of the sun cannot affect the water in its sheltered position, and it remains clear and fresh, and is most acceptable to the natives of the village. The owner sells it to his neighbors, who come flocking with their leathern buckets to receive it. Sometimes the water-seller climbs the tree and lets down the bucket into the cistern, but the more ingenious plan is to make a hole at the lower part of the trunk and fix in it a rude kind of a tap. Then the water can be drawn out with ease and dispensed to the waiting group. The wild bees often perforate the soft spongy trunk of the baobab, and make cells in which to store up their honey. This honey is more highly esteemed than any other kind.

In the spring of 1852, a hunter named Dowd was employed to supply provisions to a party of workmen, then digging a canal for the Union Water-works Company, in the county of Calaveras, California. He depended for the supply on the game that was running wild in the forests that covered the heights and valleys of the Sierra Nevada. During one of his foraging expeditions, he wounded a bear and hotly pursued it to some distance. The exciting chase led him out of the usual track, and he went farther and farther, until he reached a grove of mighty trees, the sight of which so filled him with admiration and amazement, that he let fall his weapon, forgetting the object of his pursuit. At first he thought it was a dream and that no such gigantic trees could exist, but by touching and handling them he convinced himself of their reality, and started back, all eagerness, to relate what he had seen.

But the workmen refused to give credit to his story. Instead of expressing any wish to see the giant grove, they only laughed and treated the affair as a joke. After a day or two, the subject was dropped and seemingly forgotten. But the hunter had not forgotten it. The remembrance of the wonderful grove with its towering trunks was fresh in his mind. He despaired of inducing his fellows to go and see for themselves,

and he devised a stratagem by which he could inveigle them to the spot.



THE GIANT PINE OF CALIFORNIA.

One day he came back from his hunting-expedition in haste, sooner than usual, and told the men he had killed a huge grizzly bear, the largest he had ever met with, and asked them to go with him to fetch home the spoil. The men started with alacrity, Dowd being their leader. He conducted them over ridge and plain, valley and thicket, until at last the mighty grove appeared in sight. The hunter ran forward and stood under the largest of the trees. "This is my grizzly," he said; "the biggest in the world!"

Such a discovery could not long remain a secret. The men spread the tidings far and wide, and crowds flocked from all parts of the country to behold the sight. Naturalists of all countries were much interested in this discovery, and discussed it freely. The trees were at first regarded as a new species, but, in 1834, the question of species was set at rest, and a place found in the system of plants for the mammoth tree of California. At a meeting of the French Botanical Society an eminent botanist, M. Decaisne, produced specimens of two trees, the "big tree," as it was familiarly called, and, side by side with it, one of the pines growing in the same locality. The cone proved clearly that they belonged to the same family, and the big tree was arranged in the order called *sequoia*.

The name had been given to the genus in honor of *Sequoyah*, a half-breed Indian, also called by the English name of George Guess. Sequoyah was noted for having invented an alphabet and a written language for the use of his tribe. The alphabet consisted of eighty-six characters, and it was in vogue when the missionaries arrived in the territory. They gladly availed themselves of the fact, and established a printing-press, and even started a paper in the native tongue. The half-breed died in 1843; but his alphabet is still in use among the Cherokees, and his name, associated now with the giant trees, will long be retained.

There are eight distinct groves where the giant pines are to be met with, and they occur in regular succession on the mountains of the Sierra Nevada. The Calaveras grove was the first discovered, and it is more accessible and more visited than the rest. It occupies a belt of land between two slopes of the mountains, through which a small stream meanders. On the summit of the ridge vegetation is bare. Here and there a soli-

tary pine of the ordinary kind dares to plant itself as in defiance of wind, but it is twisted into all kinds of shapes, and in some instances blighted. Lower down the pines grow more at their ease. Snow often covers the roots and part of the stem, and the mantle of dazzling white contrasts with the robe of yellow lichen that clothes the trunks and branches of the trees and hangs upon them like a fringe of golden fur. On the western slopes of the mountains are thousands of gorges and ravines, in every one of which, and in every valley and by every stream, is a dense array of pines and cedars, still of the ordinary kind.

Everywhere vegetation is on a mighty scale, and, vast as the forest is, it affords ample room for each pine to spread its branches and stand clearly out against the sky. Amid them are evergreen oaks with lengthened acorns and thick mossy acorn-cups, and their branches clothed with the same golden fur. The ground in summer-time, when the snow is gone, becomes like a carpet of brilliant flowers of every hue, that with their stars and bells make a magical effect. The "big trees" themselves are one hundred and three in number, and cover a space of fifty acres, called the "Mammoth-tree Grove."

The task of felling one of the giants occupied twenty-two days. It could not be cut down, and the men had to bore into it with augers until it was at last severed in twain; even then, the amazing bulk of the trunk prevented it from falling, and it still kept its upright position. Two more days were employed in driving wedges into the fissure, and the giant was made to totter and fall. The trunk of this tree was three hundred and two feet in height and ninety-six in circumference. the stump which was left standing presented such a large surface that a party of thirty couples have danced with ease upon it, and still room was left for lookers-on.

Fanciful names are given to many of the trees. The "Father of the Forest" lies prostrate, and must have been more than four hundred feet in height. The "Husband and Wife" lean one against the other, and near by stands "Hercules," towering three hundred and twenty feet high. "The Three Graces" stand together, and form one of the most beautiful of the groups. A portion of the trunk of one of these trees, twenty-six feet in diameter. has been taken in sections to Philadelphia to

be exhibited at the Centennial Exposition, this year. The intention of the showmen is to hollow it out, leaving the bark and a part of the wood one foot thick as a wall, and to furnish the interior as a reception-room, where refreshments will be sold, a fee being charged besides for admission.

Naturalists have held different opinions concerning the age of the largest of these trees. Some have estimated them to be three thousand years old, but an actual enumeration by De Candolle of the rings of growth of a trunk upward of twenty-six feet in diameter has shown that it had lived no more than twelve hundred and forty years.

On the banks of the river Ganges and in many parts of India is found the most stately and beautiful of the tribe of fig-trees. This is the banyan (*ficus religiosa*), a tree much valued and venerated by the Hindoo. He plants it near the temple of his idol, and if the village in which he resides does not possess any such edifice, he uses the banyan for a temple, and places the idol beneath it. Here every morning and evening he performs the rites of his heathen worship. And more than this, he considers the tree, with its outstretched and far-sheltering arms, an emblem of the Creator of all things.

The peculiar growth of the banyan renders it an object of beauty and produces those column-like stems that cause it to become a grove in itself. It may be said to grow not from the seed, but from the branches. They spread out horizontally, and each branch sends out a number of rootlets that at first hang from it like slender cords, and wave about in the wind; but by degrees they reach the ground and root themselves into it. Then the cord tightens and thickens, and becomes a stem, acting like a prop to the parent-plant. Indeed, column on column is added in this manner, so long as the mother-tree can support its numerous progeny.

The large soft leaves of the banyan are of a bright and beautiful green, and the fruit is a small red fig no bigger than a hazel-nut. It is not considered eatable by the natives, but birds and animals feed upon it; and in the leafy bower of the banyan are found the peacock, the monkey, and the squirrel. Here too are a myriad of pigeons as green as the leaf and with eyes and feet of a brilliant red. They are so like the foliage in color that they can not be seen but by the practised eye of the

hunter, and even he would fail to detect them, were it not for their restless movements. As they flutter from branch to branch they are sure to fall a victim to his arrows.

The deep shade and pillared walks of the banyan are so welcome to the Hindoo, that he even tries to improve on nature, and coax the shoots to grow just where he wishes them. He binds wet clay and moss on the branch to encourage the rootlet to sprout.

"Here oft the Indian herdsman, shunning heat,
Shelters in cool, and tends his pasturing herds."

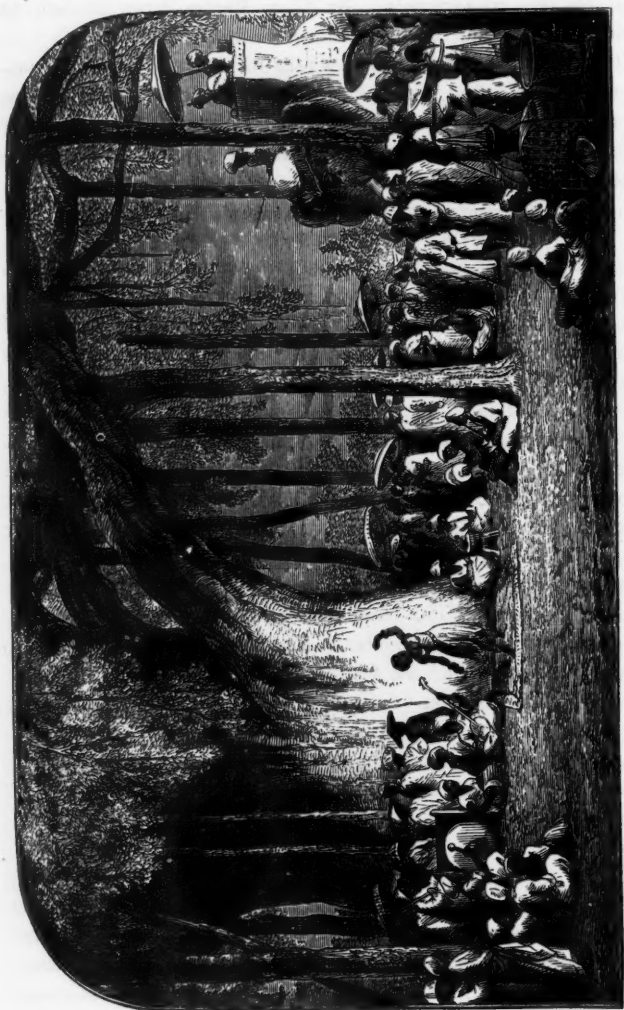
Ages upon ages ago, long before the plant world was subject to any kind of arrangement, and when kingdoms and nations existed that have now passed away, one of the fig-trees of India was an object of religious veneration, and its history has been handed down to us from this remote period as a well-authenticated fact.

It is closely allied to the banyan and is like it in general appearance and the grove-like effect it produces. But the sacred fig, or *pippul*, as it is called, sends down not rootlets, but true branches, the rounded ends of which are furnished with a large spongiolate. As soon as the spongiolate reaches the ground, it roots itself, and the column or prop is formed, as it was in the case of the banyan. The leaves are on such slender stalks, that they have a tremulous movement like those of the aspen. The sacred fig-tree of which we write has a world-wide fame, and is known as "The Bo-tree of Ceylon." It is associated with the early history of the Island, when the ruined cities, overgrown in many instances by jungle, but still objects of wonder and interest, were in their full splendor and peopled by a race that has passed away.

The capital of the island, and the sacred city of the priests, was called *Anarajapoor*, and here, in the reign of King Tissa, whose name and deeds are recorded in the chronicles of Ceylon, the bo-tree, then a mere branch, was planted in an inclosure of the temple and committed to the charge of the priests. Nor was any one allowed to pluck even a leaf; only such leaves as had been shed, and lay upon the ground, might be picked up and carried off by the pilgrims who visited the spot.

King Tissa was one of the race of sovereigns that came originally from India and had made themselves masters of

Ceylon. Under their auspices the religion of Buddha had been



THE BO-TREE OF CEYLON.

introduced, and this god was said to have reclined under the parent-tree from which the branch was taken. Although this is a mere fable, yet the severing of the branch and the convey-

ing it to Ceylon is a matter of history. It was attended with a great deal of ceremony, and the old chronicle describes it, and speaks of "the din of music, and the clamor of men, and the roar of animals, and the scream of birds." A retinue of attendants met the bearers of the branch, and it was received at the sacred city by the prince and potentates of the land. This event was as far back as three hundred years before Christ; and the imagination may for a moment recall the ancient city, with its massive buildings and temples of solid stone, and the procession of priests, and the swarms of people, where all is now silent and deserted as the grave.

But in the inclosure of the ruined temple, close by the time-worn steps, is the very bo-tree standing at the present day. It has survived the shock of war and the change of empires. Thanks to the care lavished upon it by successive generations, it is yet uninjured, though it bears the marks of extreme old age; and thanks also to the chronicles still in existence, we can fix its duration with absolute certainty. The aged trees of which we have spoken reach back no doubt to remote times, but no pen has written their history or placed their age beyond dispute. In the case of the bo-tree, its history has not only been written, but continued from age to age, side by side with the annals of the country in which it still exists.

In the forest of Mount Etna the air is deliciously cool and refreshing, and the ground is spangled with myriads of flowers. The luxuriant soil beneath causes the trees to attain a great size, and their thick foliage shuts out the scorching rays of the sun. The east side of the mountain abounds with chestnut-trees of large proportions and of remarkable beauty. They are cherished and cultivated by the inhabitants on account of their wood, which is made into hoops for casks. One of these trees has a world-wide fame, and is called "The Chestnut-tree of a hundred horses." The age of this prodigious tree must be very great. It belongs to the tribe (*castanea vulgaris*) which bears sweet or eatable chestnuts. The title—"a hundred horses"—is said to have taken its rise from a report that Queen Jane of Aragon once took shelter under its branches. She was attended by her principal nobility, all of whom found refuge from a violent storm under its spreading boughs.

Less remarkable than the giants of the forest we have described, but still deserving honorable mention, are the tulip-trees of Obion County, Tennessee. The tulip-tree is commonly, but incorrectly, called the poplar all through the Southern States. The name by which botanists distinguish it is *liriodendron tulipifera*. Not far from Troy, stands one of these trees that, five feet from the ground, measures forty-seven feet, four inches. We conjecture its age to be more than a thousand years; for, counting the concentric rings of a fallen tree of the same species, whose trunk had been sawed asunder, and which measured just five feet in diameter, we found it to be three hundred years old. In another portion of Obion County is a sassafras-tree (*sassafras officinale*) which measures eighteen feet in circumference.

VENTILATION.

I.

NEGLECT AND IMPORTANCE OF PURE AIR.

FOR countless ages nature had been at work, composing and decomposing her elements, to produce an atmosphere suitable to support and develop, from time to time, higher and still higher orders of animals and types of life. Finally that atmosphere was rendered capable of sustaining the delicate and complex organism of man. Yet man, by the invention of inclosed habitations, to shelter himself from inclemency of the weather, persists in opposing the ways and wisdom of the Divine Provider by partially depriving himself of this essential means of his existence.

If *bread* should be of the best quality, because we partake of it *three* times a day, much more important is it that we have *pure air* to breathe, since we partake of it *thirty thousand* times a day. Yet, while every attention is given to what enters the *stomach*, little or nothing is thought of what enters the *lungs*.

The science of physiology has demonstrated the philosophy of breathing, and clearly shown that every breath we draw affects our whole being; blood, nerves, brain and mind; and

so, our life, health, and happiness. Even the very food we eat, and about which we are so concerned, cannot nourish us until it is acted upon and essentially changed by the atmosphere in the pulmonary apparatus. For some reason, however, the subject of *Ventilation* is greatly neglected, not alone by the poor, the ignorant, the unwashed and wicked portions of humanity, helplessly crowded into workshops, tenement houses, and prison dens, but also by those whose intelligence and pursuits best qualify them to appreciate its sanitary, religious, and educational importance; as, physicians, clergymen, lawyers, judges, students, and teachers. Not one dwelling, assembly or lecture room in a hundred is suitably ventilated. Especially is this true of Theatres, Court-rooms, Public Halls, Churches, School-houses, and even Medical Lecture-rooms. Yet these are the very buildings, where pure air is most needed; for the reason that in these places assemble the finer organized and more susceptible classes, and because the mind is here actively engaged; requiring the brain to be supplied with well oxygenated blood.

These audience rooms, oftener than otherwise, are filled with air which has been rendered unfit for purifying the blood and preparing its nutritive elements for assimilation by dust, moisture, carbonic acid, and by impurities thrown off by insensible perspiration; also by indescribable other effluvia from putrid lungs, catarrhal throats and nasal passages; to say nothing of the fumes of rum, tobacco, and garlic. Such contaminated atmosphere, interchanged between each and all—each person breathes in and out, over and over again, the impurities of all—is not only pernicious to health, and stupefying to the mind, as partially described by the mild terms of “close,” “confined,” “stifled,” “deleterious,” “unhealthy,” etc., but it is also really offensive to the olfactory sense, and further characterized by such plain words as “impure,” “disgusting,” “sickening,” “stinking.” Still thousands of wealthy, intelligent, religious, fastidious, well-fed and well-clothed people assemble in these rooms for intellectual, religious, and social culture; nicely observant of taste, fashions, and manners, and critically judging of the discourse or performance, yet absurdly indifferent to the quality of the air they breathe; upon the purity of which depends not only their health, but also their comfort and their enjoyment of the hour. Is it not strange that this class of people, represent

ing the highest social refinement, none of whom would think of drinking, eating, sleeping after each other, or of wearing each other's clothes, still subject themselves to such atmospheric abomination and uncleanness; forgetting that, in this as well as in other matters, "cleanliness is next to godliness;" forgetting that clearness of thought and purity of religious feeling are impossible without purity of air and consequent purity of blood? How absurd to breathe poisonous air inside of a house, when the house itself is surrounded with an unbounded ocean of the pure article! Why pray for God's blessings, and, at the same time, close the door against them? Shut the door a little tighter, stop up a few cracks unintentionally resulting from imperfection in house-building, detain the assembly an hour or two longer, and nine-tenths of the Churches, School-houses, and Public Halls would become "Calcutta Holes," in which thousands would die of asphyxia.

Since the importance of thorough ventilation is scientifically understood, why is it so much neglected? We answer: First, because we appreciate least that which nature has given us in the greatest abundance; as water, air, light, electricity, and magnetism. Second, because we attach the greatest value to those things which are most palpably recognized by our physical senses; as soil, food, and drink. We fail to appreciate the unseen, unheard, and unfelt, yet equally essential and far more immediately vital principles and elements; as, insensible perspiration, air, electricity, and animal magnetism; upon which thought, health, vigor, happiness, and life itself no less depend than upon food and drink. In fact, matter, as provided in the various elements of nature and by art, is effective and powerful in proportion to its ultimatum and refinement. Gun-powder, for instance, as such, is inert; but, converted to gas, possesses giant force. Water, converted to invisible steam, by invisible heat, exerts illimitable power. Electricity, which escapes all senses, can instantaneously shiver the largest rocks and trees. So, animal life can be sustained for hours and days without food and drink. But, without air, it becomes extinct in a minute or two; and deprived of the still more imponderable elements of heat and electricity, animal life ceases instantly.

The relative importance of the different elements of nature

in sustaining health and animal life is indicated by their relative abundance.

The importance of atmosphere is indicated by the fact that it everywhere abounds. An unbroken ocean of it, forty-five miles deep, surrounds the earth. At the bottom of this ocean, where it is most dense, are submerged all living things, animal and vegetable. With a pressure of fifteen pounds to the square inch, it bears upon the external and internal surface of every animate and inanimate thing, and finds its way into every nook and corner of the earth. It penetrates the cells and tissues of all organic existences, from the minutest insect to the leviathan of the deep, from the smallest to the largest of vegetable growths; finding its way into every drop of water, every inch of soil; requiring ingenuity and mechanical skill to exclude it from any portion of space. Whether or not "Nature abhors a vacuum," she certainly does not permit one to exist.

The importance of the atmosphere is further indicated by the great and multifarious work it performs in the economy of nature. Besides its use in developing and sustaining all grades of animal life, it is also indispensable to vegetation. It is nature's universal conveyor and distributor of water over the land; without it there could be no nourishment for man or beast. Hence, in this respect, its importance is co-equal with water itself. Without it, there could be no combustion; hence, no artificial light or heat. It is also indispensable to most chemical changes in nature and art. In short, it is directly or indirectly of universal necessity, and lies at the foundation of life and all its supplies and comforts, and may be considered next in importance to the sun itself.

The importance of its *purity*, especially for animal respiration, is indicated by the fact that, whenever it is not modified by artificial conditions, its composition is always the same; whether tested at the equator or poles, in valley, on desert, plain or mountain top. Moreover, any deviation from this composition is found to be deleterious to animal life.

We shall continue the subject of *Ventilation*, in subsequent issues, by showing the *object* and the *philosophy* of breathing.

THE TEACHING OF READING.

II.

THERE can be but little question that a child may be taught to read glibly enough to satisfy the demands of teachers and school officers, and yet be left with little or no desire to read for self-improvement. Just here lies the difficulty connected with our teaching of reading in the schools. That we may not appear unreasonable in overstating this difficulty, we repeat here a paragraph misprinted in the last number.

"The learning to read has two objects. The first is utterance. The second is the acquisition of knowledge. To obtain the former object, the child is taught to distinguish and pronounce the words, and to utter them as they appear in sentences, or, as it is sometimes called, connected discourse. As a part of this, he is taught the management of the voice in pauses, emphases, and the other graces that give effectiveness to delivery."

Now, if the teacher proposes this as the work to be done, or settles in her own mind that it is the only work that can be done, and that, therefore, she will not attempt anything further, that is one thing. Such a course is the result of deliberation. It may be wrong and short-sighted, but it has the merit of clearness of purpose, so far as it goes. If, moreover, we agreed with this view of the school work, there would be no need of further discussion. On the contrary, however, it falls, as we believe, far short of the possibilities in the school-room; and it entirely ignores the greater object of the teaching of reading, namely the acquisition of knowledge. We say entirely, because if reading be taught in school solely, or mainly, to enable a child to learn its lessons in Geography, Grammar, or other studies, it is the school-work that is uppermost in such an arrangement, and it is precisely this very subordination of reading to the mechanical and compulsory business of the school-room that we wish in some way or other to break. There must sooner or later be found a way to train our children in school to a liking for a good and entertaining book. To keep a child rubbing on the grindstone of his thumbedReader, or associating the printed page with the not always well-beloved

text-book, is dangerous to a taste for reading, because it tends to produce disgust in the minds of a very large majority of school children. And it is for this majority that we plead, not of course for the few, who, from inborn tastes, or from what is quite as influential, the surroundings of a happy, intelligent, and reading family circle, acquire a habit of reading good and interesting books. These are saved by nature, and by circumstances, not by the school-room, but well nigh in spite of it, as things now stand. The others, without such gifts or opportunities, wait to be trained in the school-room, and are dumb because they know not the great need that is in them.

A very good commencement may be made with the Reader, provided it is made use of in a large way, and the teacher is not tied down to that most baneful practice of limiting instruction to a paltry number of prescribed lessons. After the elocutionary part of the training has been attended to in a given lesson, that is to say, the simpler matters of the pronunciation of new words, or of new combinations of words, and the lesson has been read once by the pupils, it ought to be the business of the teacher to go over, paragraph by paragraph, to ascertain whether the children have any true conception of the meaning. Right here comes in a part of the training that we urge. There are few intelligent teachers who do not go as far as we have indicated, and there are comparatively few who take the next step. Very few entertaining reading lessons are without whole bundles of suggestions in every paragraph. To make use of these in framing questions, and in imparting familiar information, or, better than all, in stirring the imagination and curiosity of the children, shows the skill, fullness, and versatility of the teacher. If any one will try this for herself, by preparation before the lesson begins, then afterwards by giving scope to her inquiries, and talk before the class, she may possibly be surprised at the difficulties that lie before her; but if, through patience and determination, she compels herself to persist, she will be rewarded by finding the difficulties gradually disappear. When they have disappeared she will find that she has got into a newer life, from which she would not step back if she could. As this is so important an advance on ordinary methods, it may perhaps not be deemed too elementary if we dwell a little on it.

In many of the Readers there is to be found a short analysis

of the subject of the lesson, either at the beginning or at the end. A careful attention to this frequently imparts interest to the subject before the children begin to read, but it ought to be very general, and ought not to destroy the freshness of interest arising from the discovery that the children may make themselves, if they prove attentive. But the main reliance of the teacher is in questions on the paragraphs, or often a single word therein will open up a whole world of information and interest. An intelligent teacher used to this mode of dealing with the reading lesson, came on one occasion to the words, "sent to the galleys." The inquiry was at once made by her, what is a galley? None of the children knew. She told them to close their books, and explained to them the nature of the galley-ship, and went so far as to draw a rude copy of the vessel on the black-board. She then, in a few words, told them about the terrible punishment of criminals sent there, and proceeded with the reading-lesson. At its close, she asked the children to try and remember what she had said about the galleys, to talk about it at home, and to bring to her on the morrow any information on it they might be able to collect. On their return, next day, very few of them had anything to communicate; perhaps not many of them had either spoken of the subject at home, or thought of it after they left. But the teacher had, and she had brought along with her, one or two books that told of the sufferings of prisoners in the galleys. After a familiar allusion to what they had been conversing about, she handed one of the books to a pupil to read a few sentences therein; another then read, and so on until the chapter was completed, she herself occasionally reading a sentence, or stopping to explain, or question on what had been read.

If the great object in learning to read be the obtaining of information, surely some such way as this must appear to many teachers, as well as parents, who are deeply exercised on this matter of reading, the thing to be attempted. Sir Wm. Jones, the orientalist, tells us that it was his mother who answered his many inquiries for information by, "read my child, and then you will know." If a teacher, out of her full mind, talks interestingly and familiarly on some subject coming naturally out of the study in hand, the nail is clinched by putting before the child the volume, or one of the volumes, from which she

has drawn her own information. The child thus sees the process of acquisition. Nothing can be more natural than such a mode of training, and nothing, we are quite sure, would do more to lift the teaching out of the present slough into which it is sunk, up to the higher plane where it is most desirable to place it. To guide a child into the habit of reading for knowledge is surely one of the very greatest opportunities of beneficence vouchsafed to any human being. How many doors it opens, what enlargement of mind it secures, how many otherwise weary hours it solaces, what teachers it introduces, what company it keeps, what memories it helps to renew and retain! It is not because it is money-making that we plead for the training. It may or may not tend that way. Everything in education is not to be tried by the dollar question. The American system carries too heavy a weight if it is always to be burdened by the question, "What is this or that worth?" We do plead for some such plan as has been indicated, because the present old method of dealing with reading, stops far short of what it ought to accomplish, because it disciplines little or no taste, because it allows to remain dormant a great faculty, that of the power of accumulating knowledge. We all complain of the taste in the young for dime novels, and, if worse be possible, of worse. We complain of the idleness of the young that changes into the energy of mischief, of the mockery, and vileness at the street corners; and we deplore in these youths the want of some such taste as that for reading, which would fill so many unoccupied minutes. But we do not inquire how far the schools are responsible for this state of things, nor how far they can assist in providing a remedy. For it will not do to throw off responsibility by saying there is the newspaper, and there is the book, and there is the parental and family influence. To how many children have the lines fallen in pleasant places where the parents have taste and time to guide them into the serene pleasures of reading? What is wanted is a habit, a habit that manifests itself in a thirst for knowledge; and this habit is needed in youth, during the formative period of the youth's intellectual taste. How little, too, such a habit costs when established, compared with any other that shapes or cultivates the young!

When M. Huc, the Catholic Missionary in China, was endeavoring to convert a Brahmin, the latter answered that he was as happy as he needed to be. Said he: "I shut myself up in my library, I consult the wise, I converse with the ancient." What this cultivated Brahmin said may be supplemented by the highest Roman authority, Cicero, in his oration for the poet Archias, in behalf of liberal studies, because it is equally true of reading. "These studies are the food of youth, the delight of old age; the ornament of prosperity, the refuge and comfort of adversity; a delight at home, and no hindrance abroad; they are companions by night, and in travel, and in the country."

We have been reminded while looking over what has been written, that a hint on training, closely allied to the development of a taste for reading, might very properly be given here: we mean the development of an inquiring habit of mind. Words as well as subjects constantly arise, of the meaning of which we are either quite ignorant, or have the vaguest ideas. Let any one accustom himself to stop at some of the commonest words and ascertain how clear his ideas are regarding them, and he will readily understand what we mean. In the school-room an immense deal can be done by stopping from time to time, not in the reading-lesson alone, but in nearly all the subjects of study, and putting pertinent inquiries on such points. The work is not well done, if the teacher furnishes the information. It is not, in fact, done at all. But if the pupil can be referred to a cyclopedia or other book of reference, and thus be led to hunt out information for himself, the training we speak of is begun. To what length it may be carried, depends on the patience and steady earnestness of the teacher.

DAVID B. SCOTT.

NEARLY six millions of dollars have been appropriated to educational purposes in Virginia during the past ten years. In the same period endowment schemes for the benefit of the colleges and theological institutions in the State have been wholly or in part carried out, amounting in the aggregate to \$3,400,000.

THE PLEASONTONIAN THEORY.

GEN. PLEASONTON claims to have made certain valuable discoveries as to the tonic and stimulant properties of blue glass. There is no intrinsic reason why a cavalry officer should not indulge in blue glass to a moderate and wholesome extent; but when he stimulates his mind with entire window-sashes and large blue-glass skylights, until he invents a new theory of the universe, he should be respectfully and firmly told that the good of the service does not permit an officer to exchange his usual horse for a wild and eccentric scientific hobby.

Under the influence of blue glass in large doses, Gen. Pleasonton has written a pamphlet in which he crushes the Newtonian theory of gravitation, denies the assertions made by the spectroscope concerning the condition of the sun, and insists that light is the sole force which governs the solar system. He informs us that the light radiated from the sun, and passing through the cosmic ether at the rate of 186,000 miles per second, creates a tremendous amount of friction. This friction in turn sets free electricity, and the latter, "by the junction of its opposite polarities," evolves heat and imparts magnetism to all material substances. When the sun's light strikes the atmosphere of the earth, which is vastly denser than the cosmic ether, the friction becomes proportionately greater, and the amount of electricity and heat thus disengaged is sufficient to account for the wildest ascents of the thermometer. Furthermore, Gen. Pleasonton asserts that the sun and all the planets are magnets, and that magnetic attraction and repulsion is really the force which Newton misrepresented under the name of gravitation.

The simplicity of this theory is its particular charm. The ordinary scientific person, whose mind has not been illuminated by blue glass, cannot manage the universe without the aid of gravitation and of a sun so hot that its matter is in a gaseous state. Gen. Pleasonton, on the other hand, asks for nothing but a sun capable of radiating light, and with this one substance he will undertake to account for all the phenomena of nature. Instead of an invisible force of gravity, which no one has seen, and which Newton never would have thought of had he not been irritated by the famous apple that fell upon his respectable nose, we have Gen. Pleasonton's solar light rubbing itself

against the ether, and generating electricity by the barrelful. Any person possessed of a high-spirited cat and a dark cellar can illustrate with startling effect the Pleasontonian theory of the universe. You take your cat into the cellar and rub her fur with a firm and rapid hand. In this experiment the hand represents solar light and the cat represents the ether. The friction sets free sparks of electricity. The electricity develops positive magnetism in the cat and negative magnetism in the operator's hand, and the way in which the cat turns on her axis, and alternately struggles to escape and claws the hand that strokes her, presents an accurate illustration of the attracting and repelling magnetism which produces the motion of the planets.

It is strange that no scientific person has anticipated Gen. Pleasonton in devising this beautiful theory. If Newton, for example, had conquered his resentment against falling apples, and had honestly set to work to find the true theory of the solar system, instead of endeavoring to explain his contused countenance as an important scientific phenomenon, he might have made as great a reputation as will henceforth belong to Gen. Pleasonton. It is only necessary to assume that light produces friction when passing through the ether, and that friction sets free all sorts of electricity and magnetism, and we have a basis upon which Gen. Pleasonton's theory can be almost demonstrated. But although no scientific person has thought it worth while to make these trifling assumptions, and to deduce a theory from them, the Rosicrucian mystics did not hesitate to do so, and, in fact, Gen. Pleasonton's theory is the Rosicrucian theory of the universe. They attributed to the hypothetical substance which they called the "Astral light" the precise properties which Gen. Pleasonton assigns to solar light, and they agree with him in making magnetism the sole force which operates in nature. Nevertheless, it is not to be supposed that a cavalry officer has ever read Paracelsus or Cornelius Agrippa, and the fact that Gen. Pleasonton has formulated, with the aid of blue glass, the identical theory of the Rosicrucians, is a proof that blue glass opens a royal road to the acquisition of the most profound knowledge.

Still, as has been already intimated, it is no part of a cavalry officer's duty to govern the universe. His business is with

soldiers and horses, and not with the radiation of light and the laws of magnetism. Doubtless Gen. Pleasonton would never have undertaken to explain the mysteries of nature, and to expose the shallow pretensions of Newton, had not his mind been stimulated by unlimited blue glass. If he will listen to a little friendly advice, he will abandon blue glass forever. Let him resolve not to look through the glass when it is blue, and in time he will come to entertain those modest views as to Newton and the spectroscope which befit a gallant and accomplished cavalry general.—*New York Times.*

THE NEWSPAPER IN THE SCHOOL-ROOM.

LET no pedagogue be alarmed. I do not propose anything revolutionary. I do not wish to add to his burdens, or to introduce a new text-book, much less to substitute the newspaper for any serviceable tool already in use. And the most conservative and thorough-going educator in the land shall not surpass me in deploring, denouncing, and exposing that most ruinous of mental dissipations, the reading of newspapers after the prevailing fashion. It ruins the memory, enfeebles the judgment, and weakens the power of close attention. Thus it promotes inaccuracy; distorts one's perception of the relative importance and meaning of events; favors prejudices; and so divides and distracts our thoughts that they bring forth no ripe fruit in any department. All this is true, and yet the newspapers ought to be read, and public schools should teach how to read them.

It is not necessary for this purpose that any diversion should be made to accommodate the "new study." Rather, the newspaper should be used to illustrate geography, arithmetic, history, and grammar. The facts of the text-book should be recognized as they appear in the daily journal. They will prove more interesting to the pupil when seen in natural combination with every-day interests. A class in geography or history may have been studying Russia for a week, and yet Russia shall seem to them a theoretical existence, until they take up a newspaper and read, perchance, such an item as that presented in the last MONTHLY concerning the growth of the

flax-raising interest in America, and the proportionate decrease in flax exportation from Russia. Here is an opportunity to fix in the minds of the class some important facts.

Russia has led the world in the production of wheat and flax. Why? Because of the extent of her territory alone? No. It is only in middle and southern Russia that the soil and climate are especially adapted to the cultivation of cereals. Until lately, she has not had improved implements of agriculture. Even now she imports her plows, reapers, and threshers from the United States. Until lately she has not had railroads to carry her produce from the interior to the coast; and even now she is backward in both these respects, as compared with our own country. Yet she has been able for a long time to compete with all the world in the wheat market, by reason of the immense amount of cheap, uneducated labor performed by her servile population. The Russian serfs, having a most excellent soil to work upon, and having, also, like all ignorant and degraded populations, very few wants besides the commonest necessities of life, have produced crops at a cost which only modern machinery can enable us to rival. But if they had been free, they would have sought education; if they had been educated, they would have sought out improved methods, and they would not have been content with coarse food, coarse clothes, and comfortless dwellings; they would have shared the complex wants of civilized peoples, and have learned to supply them, either by manufacture at home, or by an increase of their power to purchase foreign goods. They would have begun sooner to prosecute a variety of industries; and their natural skill in mechanics, of which the Russians have considerable, would have been so far cultivated that they might have supplied themselves with the improved tools and machines which they now have to buy of us. Russia is now re-organizing her industries; she has emancipated her serfs; she is doing much to promote general education; but by their want of education her people have lost the lead in the production of wheat and flax. She is learning too late the folly of ignorance. Hand labor cannot contend with machinery; ignorant farm management is unable to cope with that agricultural skill and general spirit of enterprise which belong to a free and educated people. The wheat farmer in New York or Ohio can produce his crop

and send it to market two thousand miles farther than the Russian sends his, and yet contend with him in price; he will also get a larger percentage from its final sale than the Russian peasant, and thus be able to live more comfortably, and to improve his farming as fast as scientific discovery shall point the way.

Here is an interesting array of facts, a part of which are set forth in the history, a part in the geography, and a part gleaned from the newspaper. Thus put together, they will make an impression; they will seem to belong, as they do, to the development of our own time.

It will be said that items like this do not always appear at the time they are wanted to illustrate current studies. It is not necessary that they should. The formal reviews, which are so valuable when properly conducted, and yet so often made worthless by the hurry to get "ready for examination," might be the occasion for presenting, either on the part of the class or of the teacher, such bits of information, bearing upon the ground traversed during the term, as have appeared in the newspapers in the same period.

Every teacher ought to keep a scrap-book, and when he has learned the art of doing it well, he should teach his pupils the value and the method of it. The habit of recognizing the true relation of those facts that are currently reported, of studying the news of the day to ascertain its importance, should be formed in youth, before the opposite habit—of reading everything and remembering nothing—becomes firmly established. There is not a boy of fourteen, or older, that does not read the newspaper. Left wholly to himself, he is likely to be captivated by whatever is least profitable, the mere anecdote, the coarse wit, the personal gossip, the sensational rhetoric, which form so large a part of the bill of fare which our editors spread before the public. Fortunate will he be, if the criminal record does not debauch his taste and his morals. But he ought not to be left to himself. He is soon to be sent into the world of men and newspapers, to choose his associates and to be influenced in his character, intelligence and aims, by thousands of printed paragraphs. They will either sap his intellectual vigor and independence, or he will draw sap from them to strengthen his mind, and make him the equal or superior of his fellows. Why should he be so assiduously

taught to recite from a book, and not be taught, also, to make right use of the newspaper, which is an ever-living page, more sure to get his attention than any book, and certain to be at his elbow his whole life long?

If any teacher thinks that the knowledge conveyed in the newspaper is very fragmentary and superficial, I agree with him. But these unclassified facts are the very same that are systematically presented in the text-books of geography, history, and arithmetic; and a proper understanding of them implies more learning than one small head is likely to carry. If any teacher thinks he can "master" a copy of the *New York Tribune* or *World*, without rubbing up his spectacles, let him try—he will come out of the ordeal a more modest man. But let him use the contents as a starting point for questions within the range of his pupils' attainments, and he will be surprised to find how much of profitable illustration, review, and correction, are involved in reading a newspaper.

OCCULUS.

THE STUDY OF ANATOMY IN PUBLIC SCHOOLS.

THE study of Anatomy and Physiology in our public schools has received increased attention of late years, corresponding to the growth of popular interest in all subjects relating to health. The prejudices that once opposed its adoption, and limited its usefulness, are fast giving way, and, among well-informed educators, have entirely disappeared. No "enlightened committee-man" now declares that pupils "should not meddle with doctors' learning, lest they corrupt their morals and injure their bodies by too great familiarity with Nature," as one of those worthies expressed himself, in our hearing, twenty years ago. The demand of our times is for a thorough elementary education in all that is essential to make good citizens; and, although the common-sense of the country has been somewhat slow to perceive that "the three R's" do not comprise everything implied in intelligent citizenship, yet it has not failed to recognize the fact that physical health is absolutely necessary to the prosperity of individuals and of the State. The reform in school architecture and furnishing, in

arrangements for ventilation and physical exercise, has evinced the popular determination to secure all the conditions necessary to sound physical development. And it is too obvious to escape notice, that to send children out from our schools ignorant of the common necessities of bodily well-being, is to commit as great a wrong as to deprive them of pure air, or to put them on ill-shaped benches, while they are getting an education.

The chief difficulties in the study of Anatomy and Physiology have been two, viz.: Want of simplicity and lack of illustration. Either the study has been encumbered with too much doctors' Latin and too much minute description, or, in reaction from this method, there has been a very hurried and superficial learning of outline facts. In both cases there has been little or no illustration, partly owing to the expense of procuring models or good plates, and partly to the natural repugnance of imperfectly qualified teachers to provide natural specimens. Any butcher's shop can supply whatever is necessary to show muscular structure, the circulation and purification of the blood, etc., and a little enterprise would enable a teacher to give his class an object lesson more impressive than a dozen pages of description in the text-book. For a more complete and accurate presentation of the human anatomy, models are necessary, and, hitherto, the obstacle to this method has been the large expense. The ordinary French manikin is far beyond the means at the command of our public school boards. It is also open to the objection of being complicated, for it is made for the use of professional students, and aims to present every detail. The learned nomenclature is another stumbling block, both for teacher and pupil. We, therefore, suggest that these objections might be obviated by the employment of a series of cheap models adapted in every respect to common school instruction. Such apparatus would do more to give clear conceptions of physiological facts than volumes of labored description. Wilson McDonald, the sculptor, has prepared such a series, true to life, of which we shall give an illustrated description in the next number.

HINDOO JUGGLERY.

A GENTLEMAN who has lived in India fourteen years, gives the following entertaining account of some of the celebrated feats performed by Hindoo jugglers :

The famous basket-trick is altogether unexplainable by any, save the performers themselves. Although we had seen this many times and under many circumstances, it could not cease to be ever new and curious. One day a party of six gentlemen assembled at my own house, and we caused the jugglers to enter the lawn and place themselves upon the open drive-way, which swept past the door. We determined, if keen attention, quick sight, and senses alert, could gain a hint of the secret, that they should in this case be effective. The jugglers, who, being of a very low caste, usually profligate, dissipated, and only one degree above mendicancy, pay no attention to costume, and are covered only about the loins, began as usual to set up the music with which they generally accompany their exhibitions. In this case there were four actors; two pretending to be "green" and the other two doing the work, at which their friends seemed astounded and delighted beyond measure. The music, which is simply infernal, and worse than ten concentrated nightmares to endure, went on, with considerable by-play and joking, before the grand test of their skill was shown. These preliminary trickeries, which were probably intended to attract and divert our attention, were followed by the placing before us of an ordinary, square, wicker-work basket, such as are in that country used for the portage of soiled linen from the house to the laundry. These baskets are woven quite loosely, so that they may easily be seen through, and are large enough to contain a child of twelve years.

Having deposited the empty basket on the gravel walk before us, the chief juggler called to his side a boy of about ten or twelve years of age, and bade him step within. Having obeyed, the juggler enveloped him in a coarse net, which he tied securely at the end, and bade him lie down, which he did. We all saw the child lying in the basket, and also could see him through the wicker work. The large cover was then shut down and securely fastened on the outside, and over all some horse-blankets were thrown, and the jugglers retired to a distance. Again the screams and shrieks of the outrageous viols and

stringed instruments filled the air with their hideous noises, but we took no note of them save to shudder; keeping our eyes fixed with determination upon the covered basket before us. Having done all possible to distract our attention, and preserve the dignity of the occasion, the two performers began to thrust swords through the blankets into the basket. No movement was perceived within, and the performers offered to bet with their accomplices and the audience which had gathered in a circle about them, that the boy was not within. Many bets were made, and then, after the swords had been thrust through every portion of the basket, the blanket was taken off, the cover lifted, and the net was exposed to our view in a little heap in the corner. The boy was nowhere to be seen; but presently, from quite a distance away, he came dancing up the walk into the midst of the crowd, welcomed with shouts of wonder and applause.

In this trick there was no possibility of concealing the boy from view by any hangings, draperies, or other paraphernalia. It was done in the open air, by half nude natives, surrounded by a circle of watchful spectators, and upon the ordinary carriage-road of a gentleman's residence. Until this day, the party of gentlemen have not been able to give the faintest shadow of a supposition regarding how this superbly executed feat was performed, and it is still a mystery to all who see it.

Another very beautiful trick of these men, is what is called the "Tree Trick." The native, who has no facilities for concealing his instruments in his garments or up his sleeves, since he has no sleeves and but very little clothing of any sort, places an acorn or seed beneath a handkerchief upon the ground. After a moment he raises the cloth, and a tiny green sprig appears to have sprouted from the acorn. Covering it again, he successively raises it, and presents it in various stages of growth, until it reaches the height of three or four feet and forms a perfect little tree, green and beautiful. Upon examination, the tree proves to be an old branch of a full-grown tree; but the mystery is: where did it come from? From what place could that native have produced all these various fresh, green branches and sprays, place them beneath the cloth without any one's perceiving it, and so plant it and arrange it in an upright position as to make it appear but an added growth to the first small leaves of green?

Another feat which seems to set all natural laws aside, is the "Sword Trick." A sword so sharp, that a sheet of paper flung into the air will, by falling on its blade, be instantly cut in two, is placed upon the ground, and held securely with the blade upward, by stones being wedged against its point and handle. Then the juggler with his bare feet approaches, and placing one upon its edge, stands upon this razor-like blade and balances himself with no apparent discomfiture. The sword, which will not bear the light weight of a hair without instantly severing it, bears the burden of its master's person, nor in any instance draws a single drop of his blood. While the spectators sit trembling with horror and fear, the performer stands at his ease, evidently delighted at the profound impression he makes upon his audience.

The art of jugglery, which is here carried to its highest elevation, and provokes the admiration and study of the most cultivated and refined, is an hereditary trade and descends from father to son successively. The juggler of to-day is the son of a juggler, and he also learned his tricks from his father and grandfather.—*Golden Rule.*

SIMPLIFY, SIMPLIFY.—Another point I make is the teaching of unimportant things. In connection with some studies are found many things that, either have no essential connection with them at all, a mere temporary connection, or one that is worthy the attention of professionals alone. It makes one shudder to think of the trash which scholars have been compelled to learn in connection with the simple studies of grammar, geography, and arithmetic. Small text-books, containing only the essentials of the subjects treated of, only those parts that have life in them, that cannot be eliminated without leaving the subject imperfect, are rare. It takes a brave man, and one merciless toward himself, to make a small, simple, but thorough text-book. Such books we must have, if we use text-books at all.—*President Chadbourne.*

PARENTAL SUPERINTENDENCE.

GAIL Hamilton," who, as our readers know, sometimes uses the pen as recklessly as the Indian does his tomahawk, undertakes, in the *Independent*, to scalp the school-officials whom our later modes of organization have brought before the public. Her sweeping style serves to amuse those who do not agree with her, and the grains of common-sense with which she salts her wildest assertions are worthy of careful consideration.—[ED'S. MONTHLY.

What real good has been accomplished by our costly and elaborate state boards and multiplied reports and relays of officials? Our school-houses have not been more really or rapidly improved than our dwelling-houses, which have been left solely to private enterprise. Our public schools have certainly no more than kept pace with our private schools, which have received neither help nor hinderance from the State. There was a time when the district met, selected its own prudential committee, discussed its own affairs, decided upon its own measures. The minister was generally one of the committee. A large number of the best men of the district attended these meetings, joined the committee in visiting the schools at the beginning and end of every term, and knew almost from week to week what was going on in the "district." Nobody was paid. It was an honorary and patriotic service, and I think I venture on no disputed ground, when I say that it was well done. But we have changed all that, and I cannot see that the change is for the better. Certainly the fathers do not, in the country districts, visit the schools, as they used to do. The clergyman is counted out, and the paid committee have everything pretty much their own way. I do not say that it is a bad way. But it is not so good as the old way. It is not so good in this, that the schools are not so set in the heart of the community as they used to be. The children are not so near the parents. They are let out by contract; as it were, to the teacher and committee, and are no longer the constant and tender care of the community, of whom they are the chief charm and charge. Superintendence has passed away from those whose interest had the keenness of personal acquaintance, relationship, and responsibility, into the hands of a paid

and professional officer. The result does not show pupils more apt, more eager, more docile, more industrious, more persistent.

I would have our unwieldy and monstrous schools broken into pieces, and every pupil relegated to the domain of personal and parental supervision. The duties of teachers and the salaries of teachers should approximate, and responsibility should easily be traced and known. There should be no male principal at the distant, not to say inaccessible, summit of a mountain-chain of teachers, with a salary thrice and four times that of the female subordinates, under the mistaken idea that only a man can organize and administer. Organization should take its proper place in the rear, and teaching should take its proper place at the front, and he who can best teach—that is, he who can best stimulate and guide the infant mind and heart—shall be chosen teacher and shall have an adequate and honorable salary, whether he be man or woman. As economy is to be consulted, we will consult it not by reducing the salaries of teachers, the persons who do the indispensable work, and concerning whose character and fitness we cannot be too exacting, but by cutting off at one fell swoop the unnecessary stepping-stones, not to say stumbling-blocks, between the community and the teachers. State boards should be summarily splintered, and our lately invented superintendent of schools would escape annihilation only by the skin of his teeth. In our present system he is an agreeable and pleasant person, but an entire supernumerary. In our reconstructed system, when the principal was simply the head of a few classes, a practical and active teacher, and when the schools were many, a school superintendent might be very convenient as errand-boy—that is, to do the outside work which is necessary, but mechanical and foreign to the real work of teaching. But he should be only a convenience, elected by the district that wanted him, and for as long a time as it wanted him, and if the district were large and populous he might be a useful and busy person. Ordinarily, however, the very best school superintendents are the fathers and mothers, the uncles, aunts, grandmothers, and older brothers and sisters of the pupils. Give us good teachers and small schools, and let all this costly paraphernalia go, as tending to distraction, rather than to education.

The genius of our country, if I rightly understand it, is to reduce government to its lowest terms and remit power to the people. We believe that it is better for a man to take care of himself than it is for government to take care of him, even though he be not so well cared for under his own rule as under governmental control. We believe, that is, that the development of the individual is of more importance than the perfection of any system ; that the Sabbath was made for man, and not man for the Sabbath.

This is true with respect to our schools, as it is true with respect to every little town meeting called to regulate town matters of every sort. A few wise men would, doubtless, theorize a far more logical and symmetrical path for our village life than the one we stumble along in ; but we are far stronger men and women for tracking and following our own path. We may concede, what is by no means proven, that a State board can give us a more elegantly constructed school system than we can build for ourselves ; and it would yet be true that it is better for the people to manage their own schools. We are in the most healthy condition when every parent, and, I may say, every adult, feels a personal interest in, and responsibility for, the well-being of the schools, and not when we feel that some board, or appointee, or any official whatever, whom we but remotely touch, is doing the work for which we are in no wise answerable.



HELP IN THE STUDY OF THE ENGLISH CLASSICS.

A CLASSIC may be defined as a literary production which is universally praised—and well-nigh universally neglected. The general readiness to adopt current opinions, rather than to beget one's own by careful study, leads to the most hurried and partial reading of the old authors. The majority of readers content themselves with a knowledge of the stock criticisms current in polite society, and join in lavish, indiscriminating praise. They do not so much as dream that exceptions can ever be taken to the general verdict. They do not perceive that culture is not a conventional polish applied to the surface and appearing in certain set phrases, but a fruitfulness

of thought, resulting from personal familiarity with the best thoughts of others. Without this familiarity on our part, the classic authors are of no practical value. They are mere names, symbols of reputations which have no hold on our minds. Yet the multiplication of books, the progress of scientific knowledge, and the general broadening of the conditions of culture, make a systematic and complete study of the English classics well-nigh impossible for those who are trying to keep "abreast of the age," and to earn a livelihood at the same time. No one man can do everything, and the limitations of most of us are such that, unless we are aided in the work of selection by others, our own efforts must, to a great extent, be wasted.

Compendiums of English Literature and books of brief selections have done something in promoting familiarity with classic authors, but, at best, they can afford only a taste, which may serve as an incitement to begin study. They do not supply the want, felt by so many, of an eclectic series of master-pieces, containing only the best works of standard authors, un mutilated, and in a form suitable for students' use. To buy a library, that should not be without some reputable author, is out of the question for most schools or individuals; and almost equally unavailable for study are the cheap sets of standard works called libraries, which are often selected more with reference to publishers' profits than to a just classification for the benefit of the reader.

It seems to us that the help most needed by the older pupils in our schools and colleges, and also by many persons who have graduated from pedagogic supervision, can be best secured by the separate publication, in a cheap, convenient form, of such works as Milton's *Comus*, and the best papers of the *Spectator*, with notes, analysis, hints as to rhetorical peculiarities, oral expression, etc., like those contained in Sprague's "Master-pieces." By the use of small volumes prepared on this plan, a class might be taken through a portion of the field called classic, and become thoroughly familiar with its leading features. The entire omission of the greater part of any author's writings would be no disadvantage compared to the superficial system generally practised, of taking at second-hand the opinions of others, however just, and skimming over the works, good, bad, and indifferent, which are bound together by the reputation of great names.

THE "SICK MAN'S" CHILDREN.

IN counting the chief political divisions of modern Europe, it has been customary to enumerate, first, "five great powers," and thereafter, a sixth power, great only by the consent of the others, the Ottoman empire, commonly called "The sick man" of Europe. The Turkish sovereign maintains his supremacy over the heterogeneous populations of his wide realm only by virtue of the jealousy of rival nations. Prussia and Austria are afraid of Russia's aggressions, and because they cannot of themselves prevent her seizing Constantinople, and finally absorbing both Turkey and Greece, they unite with England and France in disclaiming all covetousness, and maintaining against themselves, as well as Russia, that precarious "balance of power" which is threatened by every rumor of war that blows over Europe. The fictitious power of the Sultan must be bolstered up on every side at all hazards, lest the real powers that be devour each other; that is the key of European politics. But inasmuch as expedients never have the vitality of true political systems which have grown out of the needs of a homogeneous people, every European statesman, not excepting those most prominent in perpetuating this hazardous game of see-saw, watches the affairs of Turkey with a solicitude only second to that which he feels for his own country. Consequently, Turkish finances, Turkish despotism, Turkish religion, Turkish whims, and Turkish rebellions are treated with a consideration altogether disproportionate to their intrinsic importance. And now that tumult has arisen, for the twentieth time, in one of these Turkish dependencies, every eye in Europe turns toward the beautiful blue Danube, and every ear awaits the dread sound of war in the East. The sick man's welfare lies so very close to the hearts of his healthy neighbors!

Servia is the most obstreperous of Turkey's adopted children. Bosnia, Roumania, Herzegovina, Bulgaria, and other neighboring principalities, are inhabited by the same Slavonic race, and the people speak various dialects of the Servian tongue. In religion they are divided, although the Greek faith is predominant. Mahomedan intolerance has bred intolerance among all sects. Roman Catholics, Protestants, and

Jews hate each other with great impartiality. This intolerance has multiplied the difficulties of maintaining peace in the Turkish household. Some of these provinces are practically independent in all respects, except the payment of a yearly stipend. The love of liberty is growing with its exercise, and with the growth of intelligence. When the Turks first conquered this Slavonian territory in 1389, they were, in a true sense, a war-like power. They knew how to fight. They were not enervated by centuries of luxury. They asked no one to nurse them. "There is no God but God, and Mahomed is his prophet"—that was to them the beginning and end of all things, of religion, politics, society, and war. When, therefore, they encountered the half-decayed Byzantine Empire, it fell to pieces at their touch. The rich and lazy nobles easily became converts to save their property; the ignorant peasants were easily made subjects. The powerful Mahomedan, having conquered a whole empire, then sat down to enjoy it. The rapacity, cruelty, and oppression in which he indulged soon made him the weakest of all reigning powers. But now his good luck saved him. His capital was the key of the Mediterranean, and his powerful neighbors could not agree as to which of them should hold it. And when province after province rebelled against his ill-used authority, the five great powers shook their heads gravely, and said: Be quiet, Christian brethren; it is for the peace of Europe that the Sublime Pretense be allowed to abuse you. But these provinces have acquired a semi-independence, so that their internal administration is in their own hands. They are like children, allowed to play in the back-yard, out of sight and relation, as to the outside world, and subject to only such spankings as may be suggested by their own contradictions and discontent. If they would be good Moslems, and pay roundly, the Sultan and his officers would not trouble them further. Unfortunately they have fiery tempers, a divided faith, democratic aspirations—endowments irreconcilable with national repose. Servia's constitution is that of a limited monarchy; but the spirit of administration is wholly democratic. A nation of peasant proprietors does not countenance despotic measures, aristocratic distinctions, and official magnificence. The mayors of the larger towns receive less than a thousand dollars

salary. Until lately, education has been much neglected. In a population of a million and a half, there are now three hundred and eighteen primary schools, ten secondary schools, and three universities. The language of Servia is not spoken by any other civilized community, so that professors and schoolmasters are found with difficulty. Superstition is rife; witchcraft is supported by considerable patronage; the railroad has not yet made people acquainted with foreign enterprise; but the spirit of resistance to oppression is bred in the bone, and it will out in the flesh. That is the seed of all intelligence. The great powers may patch the old deceptive peace for a few years longer, but the boy is fast growing, and when he becomes of age will dispose of the sick man of Europe. Servia makes its own fire-arms; it will one day make its own terms with the nations that have kept it under the heel of the Sultan. Even now the Czar of all the Russias, the Emperors of Germany and Austria, and the parvenu "Empress of India" are afflicted with head-aches, brought on by apprehensions of Servian revolt. The "balance of power" is always in danger. If either of the "five powers" slips off the plank, the game of see-saw is over.



SIGNS OF PROGRESS.

THE public school teachers of New Orleans, four hundred and fifty in number, have formed an association for mutual improvement and assistance, and have established a Reading Room and Exchange, to be furnished with everything professionally attractive and useful. A good example.

IT is proposed, at the close of the Centennial Exhibition, to purchase materials used in the art industries of various countries, in order to form the nucleus of a permanent museum which is to be connected with a School of Industrial Art. This school is to be a resort for those who follow or intend to pursue industrial callings, where they may study the designs and perfected works of the most skilful artisans, and thus educate their taste and derive practical knowledge in their several branches.

SEVEN public libraries in Rhode Island have availed themselves during the past year of the offer of the State to afford them aid, on condition of compliance with certain specified conditions. Such an offer should be made in every State, for in no way can popular education in schools be more effectually supplemented than by stimulating the reading of valuable books among all classes. The object is not to found libraries at the State's expense, but to induce citizens to do so, and to secure for universal use a class of books which are of genuine worth and importance.

THE Exhibition of Drawings from the public schools of Massachusetts, according to the testimony of persons who were at Vienna, suffered in no respect by comparison with work from similar European schools. The encouragement of Industrial Art by the establishment of a special Normal School and by the introduction of drawing in the public schools, under competent instruction, is likely to prove both an incalculable pecuniary benefit to the manufacturing interest, and a wholesome stimulus to whatever genius for art belongs to the coming generation. The Lowell mills are even now executing in carpets designs prepared by pupils of the Free Art School. It will take longer to develop the genius for what is called high art; but "well-begun is half-done," and it is a good beginning for every person to learn by a fair trial with the pencil whether or not he has any special aptitude for art pursuits. To those who have such aptitude, elementary instruction in art is often a revelation of their life-work. It is for the interest of the State that every man should do that which he can do best, and that as few mistakes be made as possible in the choice of a profession. Free education helps to their avoidance.

THINGS TO TALK ABOUT.

WE put first upon the list this month, a thing to *do*, viz.: to follow out Commissioner Northrop's suggestion of "Centennial Tree Planting." There is hardly any act which involves at once so much of forethought, public spirit, taste, liberality, and patriotic association, as the planting of ornamental trees in places where they may be of common benefit. The

Connecticut River valley will be a "joy forever," because of the unselfish foresight of the men who planted its many thousand elms. The Centennial year is a good year to imitate worthy examples, and to make new and honorable precedents. We think every citizen ought to set his mark upon the landscape which surrounds his home, and contribute his living testimony to the doctrine that it "pays" to work for those who cannot recompense us. The school teacher is certainly not least in the practical exemplification of this doctrine, and he has the opportunity and influence to inspire others with it. In what better way, just now, can he do it than by securing for the village street, or school grounds, a row of elms, ashes or maples?

DOUBTLESS the Exposition will be visited by many who read these pages, and we therefore take it upon ourselves to bestow the following fatherly advice: If you have only two or three days to give to it, make up your mind not to attempt the whole. Select the departments which you least care for, and resolutely confine yourself to the systematic examination of the others. If you enter the buildings with no definite decision in mind, you will go aimlessly from one diverting sight to another, and waste much time in seeing what you really enjoy but little. If you are with a party, of course mutual compromise and consideration must be the guide; but here there is need of another caution; *do not go* with a large party; there is no profit in it. It is impossible to examine anything with attention while in the midst of an admiring group of your own friends who feel at liberty to call, "See here!" or, "See there!" faster than you can twist your neck or turn on your heel. Moreover, if you separate from your friends to meet again, let it be distinctly understood by both parties, when and where you are to come together. Lastly, if you have the decision to stop short, each day, by one-half hour, of the greatest possible amount of sight-seeing, you will avoid that exhaustion of the mind which unfits it for renewing its work the next morning. And if you can by this means secure time to take somewhat fuller notes of your fresh impressions than you otherwise would, the trouble will be amply repaid in the permanent satisfaction of clear remembrance of what you have seen.

CURRENT PUBLICATIONS.

WESTLAKE'S "How to Write Letters"¹ is an improvement upon most books of its kind, which abound in absurd models and directions of questionable value. If letter-writing is not to become a lost art, more attention must be paid by all classes of persons to niceties of penmanship, punctuation, and style. There is nothing in which the value of little things is more apparent than in the writing of a letter. Teachers should not neglect this important department of common-school instruction.

EX-PRESIDENT HILL, of Harvard, deems Geometry the fundamental step in education, and in his recent work, "The True Order of Studies," declares that it should precede Algebra. President Schuyler supposes the student of this volume² to be already acquainted with Algebra to some extent, and omits the discussion of proportion, "as properly belonging to Algebra." In most other respects this book is peculiarly in accordance with the views of Dr. Hill in regard to a text-book on this subject. The logical facts and laws which underlie the science are very carefully stated at the outset. The propositions are well connected with each other by the chain of reasoning on which they depend, and a large number of exercises are inserted in the body of the work. The use of small letters to denote the angles, without reference to the larger letters on the sides, is admirable for beginners. It is doubtful, however, if younger pupils would be able to comprehend readily the discriminating analysis of the logical foundation, which is more notable for its thoroughness than for its simplicity. Definitions once given, the technical terms are introduced in such profusion that pupils of average intelligence would be slow to perceive the relations of the principles whilst attempting to master the language used. For example, after a set of preparatory statements, we arrive at the following on page 15: "The *converse* of a *categorical* or a *disjunctive* proposition is the proposition obtained by interchanging the subject and predicate.

¹ Sower, Potts & Co.

² Elements of Geometry with Exercises for Students and an Introduction to Modern Geometry. By A. Schuyler, LL. D., President of Baldwin University. Wilson, Hinkle & Co.

Thus: No right angle is an oblique angle; conversely, No oblique angle is a right angle; also, An oblique angle is an acute or an obtuse angle; conversely, An acute or an obtuse angle is an oblique angle."

The celebrated Pythagorean proposition is given as a corollary to another proposition. In the limits of a page it is proved that: "*An inscribed angle is measured by one-half of its intercepted arc.*" To this demonstration eight corollaries are appended. Such terseness is not objectionable for advanced students taking a review, but would severely tax beginners.

The last book (Book VIII.) is devoted to Modern Geometry, and contains nineteen propositions and their corollaries. They relate to Transversals, Harmonic Proportion, Anharmonic Ratio, Pole and Polar to the Circle, Reciprocal Polars, Radical Axes, and Centers of Similitude. The formulas for the circle are collected in a table as are also those for the sphere. A supplementary section on "Maxima and Minima" and one on "Symmetry" are also introduced, as is also the "Doctrine of Limits." For the use of teachers it must prove a great convenience as a book of reference, and for older pupils it affords suitable exercise. The mechanical execution is excellent.

³ THIS very practical little book is entirely independent of the mazes of analytical statements, and is devoted to the development of correct habits of speech on the part of young children. There is also a secondary but exceedingly important design, that of imparting a little knowledge of natural history. A number of appropriate illustrations are introduced with accompanying questions, intended to stimulate the young pupil to habits of observation and thought. The present edition is a revision of that published in 1871.

⁴ THIS little volume is a compilation of such pieces as have been tried by the standard of enduring popularity. The selections are not, however, confined to the class worn threadbare by repeated recitation. The collection is in two parts, the first part comprising poems designed to be learned by children from six to ten years of age; the second contains nearly two-

³ Lessons in Language: An introduction to the Study of English Grammar. By Hiram Hadley. Part I. Hadley Bro's & Co. 108 pp., 12mo.

⁴ Poetry for Home and School. Edited By Anna C. Brackett and Ida M. Elliot. G. P. Putnam's Sons.

thirds of the three hundred and fifteen pages, and is adopted to matured minds.

* THIS little volume is designed for the use of Sunday-school teachers. Its aim is strictly practical, to clear up the meaning of Scripture words that have changed their meaning or gone out of use since the Bible was translated.

A CRITIC CRITICISED.

Is this MONTHLY for May there appeared, under the head of "Current Publications," a review of a little book recently written by Messrs. Reed and Kellogg, entitled "Graded Lessons in English." We had supposed that such stuff as this review is made of was under the monopoly of the slashing newspaper critic. No one knows better than he how hard it is for a writer to refute a sneer aimed at his intelligence, and no one is happier than he in the certainty that bald assertions will usually be answered by one's holding his tongue. Such an air of serene assumption pervades this review, and judgment is pronounced in a style so oracular and *ex cathedra*, that one lays down his pen as often as he takes it up to reply. One feels himself at such odds with a disputant whose very postulate is this: Difference from me is the measure of your absurdity. But when such criticism creeps up out of its place and displays itself in the dignified professional monthly, its position gives it an importance to which its merits do not entitle it. Our only apology for the strictures we are about to make upon the review is the character and high respectability of the journal in which it appears.

The critic opens by quoting a sentence from the authors' preface (*author's* he writes it*) and asserts that its construction and punctuation are faulty. When he specifies *wherein*, it will be soon enough to defend the sentence as it stands. He then selects from different parts of the book several such directions as "Build on each of the following subjects, three sentences," and remarks that such directions weary the ear. Does the Saxon word "build" so offend, and would the Latin *construct* tire less? That word was used because it was thought the pupil could understand it, and was frequently repeated when the *exercises* was to be repeated. The book was written for boys and girls in the class-room, and it was written in the spirit of "line upon line, and precept upon precept." There was no straining after the euphony and elegance of the essay through fear that some sensitive ear might else be wounded. The critic then quotes this example, given for correction: "He divides his property between his four sons," and accuses the authors of making the very mistake they give to be corrected, when they say, "We have distinguished between four things." If it is the same mistake, then the correction must be the same: We have distinguished *among* four things! There is abundant warrant for the authors' use of *between* in their sentence. Matthew Arnold says, "read *between* the lines." The rhetorician Campbell says, "Between two or more authors, different readers will differ." Whitney, in his grammar says, "points of difference *between* this and other grammars"—hardly intending, we suppose, to take "other grammars" as *one whole*. Gould Brown, who so seldom allows a violation of a rule even in the interests of idiomatic English, is forced to say that the use of *between* in the sentence, "The Greeks left no spaces *between* their words," is admissible. Who would question its pertinence in the sentence, "There are *forty desks* in the room with ample space *between*?" If it be said that in all these cases the *things* are taken in couples and that *between* is even here used only "when two things are referred to," we reply that the same claim can be made by the authors for their sentence. No one, however, would extend the claim to the sentence they hold up for correction. We cannot take leave of this point without an earnest protest against the notion the critic seems to hold in common with so many grammarians, that words do not and should not slip from the moorings of their etymology. Happy is it for speech and for literature that, in spite of grammarians, they *do* drift. Witness the word *journal* which we have used, *noon*, *bombast*, and *with*. Hosts of others might be added. Maetznor, while saying of this very word *between* that it was used originally with regard to its stem *trei*, allows that it may stray away from a duality of objects, and quotes at least a half dozen of instances in which it does.

* Bible-Word Book: By Wm. Swinton. Harper Bros.

* The proof-reader takes upon himself the burden of this enormous oversight.

The critic continues—"But this is not all; the lessons are not so well graded as the authors would have us suppose." And, letting go assertion, he now essays proof. In a book of one hundred and forty-three pages, he finds this one signal instance. "The authors say that conjunctions 'may connect clauses,' but as to what 'clauses' are the pupil is left in blissful ignorance for twenty-six pages." The authors were here preparing the pupil for the definition of a conjunction. One of its functions is to connect clauses, but they could not then and there define *clauses*, and so, after showing that conjunctions may connect words and phrases, they added: "Conjunctions may connect *clauses*; as, 'He must increase, *but* I must decrease.'" Was that leaving the pupil in "blissful ignorance?" Must one have a thing *defined* before he can understand it? Should not a definition rather be a mere record of what, from previous preparation, he *already* understands? But the critic is doubtful whether, twenty-six pages on, the pupil will get a correct idea of a clause, for it is there defined to be "a part of a sentence containing a subject and its predicate:" and so, in the sentence, "Jonah preached to the inhabitants of Nineveh," the pupil might mistake *Jonah preached* for a clause, as these two words seem to "fill the bill." The authors are not doubtful if the critic is. That definition the pupil is made ready for by the "Hints" which immediately precede: it is, in fact, but a *résumé* of what was there fully unfolded. He is thus *barré* from the mistake suggested. But, says the critic, "no illustration, as usual, is given *with* this definition." Precisely so. The authors do not give illustrations *with* the definitions. Theirs is another plan. They develop and illustrate the thing to be defined in their "Hints for Oral Instruction," and then let the definition follow as a condensed statement of what is therein taught. All other illustrations are to be given by the pupils themselves in exercises headed Sentence-Building. For this plan the authors have received the highest commendations from leading teachers throughout the country. Teachers are tired of hearing definitions repeated with illustrations hitched on thus: "The Imperfect Tense expresses past time; as, he *broke* the bottle and *spilled* the brandy."

But the critic asserts that, further on, the pupil is befogged by finding that not a part of a sentence but the whole sentence is sometimes a clause. The authors teach no such thing. The complex sentence they define to be a sentence made up of one independent clause and one or more dependent clauses. "That stars are suns is taught by astronomers," they regard as a complex sentence. But it is a peculiar one: there is no independent clause in it. Just what the authors *do* teach is that the whole sentence here *takes the place* of the independent clause. They might have completely shirked the difficulty as many grammarians have done, or they might have met it as Mr. Whitney does. With him, clauses are parts of a complex sentence, and there must be, at least, two of them in the sentence. *That fortune favors the brave is cheering*, is a complex sentence, he says. *That fortune favors the brave is one* clause, the pronominal, and, of course, *is cheering* is the other. Nay! as clauses are "sentences considered as parts of a complex sentence," *is cheering* done epaulets and becomes a sentence!

Through the remainder of the article, the spigot is drawn, and the lees run full stream. In a single sentence, the authors are charged with incorrect definitions, faulty arrangement, superfluous lessons, absurd treatment of the infinitive, false treatment of the subjunctive, misuse of the definite article, worthless rubbish for correction, useless rules of syntax, and, in the critic's own words, "To say nothing of anything else, the punctuation is not faultless!" Like "Rip," the authors doubted their own identity on reading this.

"Then I looked up at Nye,
And he gazed upon me;
And he rose with a sigh,
And said, 'Can this be?'"

The authors cannot fight insubstantial phantoms, Mr. Critic. Put any or all of these charges into the concrete, point out precisely the *where*, the *what*, and the *why*; and though polemic neither in taste nor in training, but as peaceable as Irenæus himself, they promise to give their bantling the best defense in their power. In writing this initial book, the authors had no hobbies to ride, no pedantry to air. All the grammatical principles needed, for the *complete understanding and construction* of a correct English sentence, they attempted to give. They tried to get these principles into the pupil's mind, and then, by all available methods, they endeavored to make him translate them into practice, so that they should be not so much *his* as *he*. In going before the public with their little book, this is the issue they raise with the technical grammars, and on it they ask that their work may be tried.

REED AND KELLOGG.

PUBLISHERS' DEPARTMENT.

Teachers, more than any other class, are interested in *suitable exercise* for themselves and their pupils. Hence, we give recent *testimony* concerning *Dr. Johnson's Health-Lift*:

Rev. W. H. Campbell, D. D., LL. D., President of Rutgers College, New Brunswick, N. J.—It is used in my family every day, and with much advantage. It is fulfilling all that has been promised in regard to it.

Georgetown College Journal, D. C.—One of these useful and elegant instruments was placed in the corridor adjoining the billiard-room, March 21, and is immensely popular.

Rev. H. C. Fouke, Cumberland, Ohio. Its effect in quieting the jaded nervous system, slowing and fulfilling the frequent and thread-like pulses, deepening the breathing, and imparting a sensation of being rested, is very marked in my case.

President M. W. Jacobus, D. D., LL. D., Western Theological Seminary, Alleghany City, Pa.—I make daily use of Dr. Johnson's Health-Lift. I am sure that it gives me the kind of exercise which I more especially need; and I think it has had much to do in restoring my health.

George J. Anderson, Banker, Sandusky, Ohio.—I have always been an adherent of the Health-Lift system, having used it in one form and another ever since first introduced. Having now used Dr. Johnson's machine for some months, I am satisfied that it is superior to any other in use, possessing all the advantages of other Lifts in the most compact and convenient form.

H. C. Miller, Wiscasset, Me.—It has helped me. No dyspepsia since I began to use it.

The American Farmer, Baltimore, Md.—The most portable, efficient and popular Health-Lift of the day.

Zion's Herald, Boston, Mass.—It is really an ornament to a library, is portable, easily arranged, and sold for one quarter of the price of the larger and more elaborate machines. Of the effect of this exercise, wisely and constantly taken, by both sexes, and all ages, there can be no doubt. The testimonials are "legion" and of the most assuring character. To secure muscular strength, a regular circulation, a healthful digestion, and general vigor and sense of life throughout the system, the lift cure has proved

an unquestioned success. The present patent brings it within limited means, and renders it an attractive piece of household furniture.

Rev. S. W. Whitney, Flushing, N. Y. We have satisfied ourselves of its worth. Mrs. W. for two or more years has been troubled with numbness in the arms and fingers, apparently from want of free circulation of blood, so that it was impossible for her to sew or do any thing. Having tried other remedies to no purpose, we took Dr. Johnson's Health-Lift. Its daily use for a few weeks has greatly benefited her, and promises to relieve her altogether.

James W. Cairns, Lawyer, 26 Broad St., N. Y.—I have used Dr. Johnson's Health-Lift for some time and consider it an excellent invigorator of mind and body. It ought to come into general use, especially among professional men.

The Art of Reading Music, by Mrs. L. B. Humphreys, is meeting with enthusiastic approval wherever Mrs. Humphreys has tested its use with a class in the school-room. Her system is natural and most successful. It will enable pupils to learn to read music at sight, as readily as they learn to read the first lessons of their primers. The day is not distant when Mrs. Humphreys' plan will be recognized as revolutionizing the art of teaching music in our schools.

A Timely Discourse on School Apparatus, in circular form, showing a practical way of meeting some of the wants of the school-room, is now ready, and will be mailed to any address on application, with stamp. Address J. W. Schermerhorn & Co., 14 Bond Street, New York.

For the interesting illustrated article on "Wonderful Trees," with which we begin this number, we are indebted to the publishers of *Home and School*, J. P. Morton & Co., who kindly gave permission to copy it. The illustrations in this article were prepared expressly for Butler's *New Readers* published by this firm, who show the same liberality and enterprise in the production of their text-books as in the make-up of their entertaining magazine.

The Abbott Pocket Microscope is a convenient instrument for examining seeds, insects, etc., where a high magnifying power is not wanted, and its cheapness brings it within reach of all.